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ABSTRACT

This evaluation report of preschool programs for the hearing impaired reviews the field in terms of two basic educational philosophies: (1) home centered socialization and (2) child-centered, cognitive-academic approaches. Related research literature is reviewed, although it is stressed that dissapointingly little comparative data could be found. Special difficulties in evaluating hearing-impaired programs are discussed, and an interactional approach is proposed. Based on Cronbach's Characteristic by Treatment Interaction Model, this kind of evaluation emphasizes individual differences rather than group effects. As an alternative to experimental-control design, many diverse programs should be evaluated to see what kinds of children do best in different kinds of programs. Evaluation must be done by objective professionals from outside a program. To insure objectivity a group of evaluators should represent various viewpoints in education. Plans for the 5-year program, including the development of new testing and assessment techniques, are presented. (DP)

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AN INTERACTION ANALYSIS MODEL

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RESEARCH AND DEVELOPMENT CENTER
IN EDUCATION OF HANDICAPPED CHILDREN
Department of Special Education

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The University of Minnesota Research, Development and Demonstration Center in Education of Handicapped Children has been established to concentrate on intervention strategies and materials which develop and improve language and communication skills in young handicapped children.

The long term objective of the Center is to improve the language and communication abilities of handicapped children by means of identification of linguistically and potentially linguistically handicapped children, development and evaluation of intervention strategies with young handicapped children and dissemination of findings and products of benefit to young handicapped children.

Evaluation of Preschool Programs:
An Interaction Analysis Model

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The Special Education Research and Development Center of the University of Minnesota is in the first year of a projected five-year study of the efficacy of various types of preschool programs for the hearing impaired. It is not the purpose of this paper to develop a rationale to "prove" that one of the three or four most common methodological approaches to education of hearing impaired children is the "best" or only approach. It is assumed that the audience is familiar with at least the basic arguments for and against the Oral-Aural, Simultaneous, Acoupedic, and Rochester methods and has reached some conclusions, however tentative, about the usefulness of each.

Philosophies of Education

Of perhaps more importance than purely methodological considerations are what I shall refer to as the two different philosophies of education which, in my opinion, are developing in preschool programs for the hearing impaired throughout the United States.

The first, and until quite recently completely predominant, philosophy has its roots in the pioneering work of educators of the deaf in Western Europe, with much of the leadership coming from

Great Britain. I shall label this the Home-Centered Socialization philosophy. Attention is focused on activities around the home and a "natural-language" environment is emphasized. Parent guidance is a major aspect of such a program and physical placement contiguous to hearing peers is usually an essential component. Stress is placed on the spontaneous development of language skills and of speech skills. Descriptions of such programs may be found in the writings of Griffith, (1967), Knox and McConnell (1968), Pollack (1964), and Reed (1963).

The second major philosophical approach, which I shall label Child-Centered, Cognitive-Academic, is assuming a growing influence on many new programs. It grew out of the failure of traditional socially-oriented preschool and nursery programs to serve disadvantaged children in the United States and, to a lesser extent, Israel. A spate of research findings in the past five years suggests that the only successful intervention programs for the disadvantaged have been those which contain a highly structured component with specific academic-cognitive training. The work of investigators such as Bereiter and Engelmann (1966), Di Lorenzo (1969), and Karnes et al (1969) have had the greatest impact.

As the work of these researchers becomes more widely known among educators of the deaf, we may witness a change in the orientation of many systems toward increased attention to the cognitive-

academic sphere. If we may generalize from the few programs of such a type in existence today, the focus of attention would shift from the parent to the child and skills such as reading readiness and number concepts would be begun as early as two years of age.

Proehl (1970) has described a public school program for the hearing impaired developed on these principles.

Related Research

In view of the strong opinions prevalent in education of the deaf, it is somewhat disappointing to find that comparative research is almost nonexistent. Most of the literature cited as "proof" for the benefits of one approach or another may more properly be classified as program description. The typical article or paper involves a program being described, defended, and praised by a person who has developed it or who in some way is closely related to it. With the exception of an occasional tape or audiogram, no data are presented. Position papers, and descriptive works do, of course, serve an important, even essential, informative function, but we should never make the mistake of treating them as evidence.

If we look at the few attempts to evaluate preschool programs, the results are disheartening. Comparisons of children receiving traditional preschool training with children having no preschool training suggest a "wash-out" effect (Craig 1964). By nine years of age there appear to be no differences between experimental and

control groups. The results are consistent with these reported for traditionally-based preschool programs for the disadvantaged. One of two conclusions I believe may be reached. The first is that such a preschool experience is of no benefit to the children. The second holds that it was effective but the benefits were dissipated by the failure of the schools to take advantage of them in the primary grade years.

McCroskey (1968) compared children who participated in a home-centered program with auditory emphasis to children who received no training and found few differences between the groups. What differences existed tended to favor the control group, those with no training. The investigator postulated that the experimental group consisted of a "basically inferior product" which had been brought to a position of equality with the control group.

Only one study has ever been conducted which directly compared preschool hearing impaired children receiving instruction under two different methodologies. Quigley (1969) reported that children being taught by the Rochester Method (Oral and Finger spelling) were superior to those taught by the Oral-only method. The generalizability of the results, however, is open to question.

Difficulties of Evaluation

The difficulties of evaluation of any type of educational intervention are multiplied when dealing with the preschool hearing impaired. Underlying the hostility and suspicion which is endemic

to our field is the tremendous complexity of the task. How does one measure the speech, language, and communication ability of four and five year old deaf children? Are there any valid measures of parent attitude? Are differential programmatic effects transitory? Do or can children in one program who are behind at age four in one area close the gap by age eight? Is it possible to develop measurement techniques which will be fair to children in programs which have different goals and therefore different concepts of success?

It is apparent that evaluation must come from outside. Program administrators, no matter how well-qualified, cannot be expected to provide objective assessment. In my opinion the investigator should have a thorough knowledge of the issues in education of the deaf and should be an educator of the deaf himself. This, however, raises another problem because most educators of the deaf, the speaker included, tend to have their own opinions on how hearing impaired children should get taught. This situation, I believe, can be neutralized by involving people with different viewpoints in the planning and conduct of the education, as will be described later.

Rationale of the Study

The investigation is based on Cronbach's (1957) Characteristics by Treatment Interaction Model which was developed on the thesis that the results of educational research, consisting mainly of comparisons between groups, have been of limited value. The typical

procedure has been to match two groups of children and to give Group A the experimental treatment while the control group receives either the "traditional" approach or no treatment. At the end of a specified period of time appropriate statistical techniques are applied with the result that the scores of Group A are significantly superior to Group B. Because the experimental treatment has been demonstrated to be more effective, the conclusion is then reached that this is the most appropriate approach for all children.

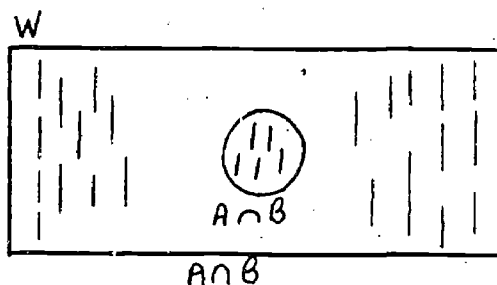
Such investigations have the benefit of being neat and producing clear cut results but they are overly simplistic and do not reflect the complexities of the real world. In almost all investigations of this type there is a great deal of overlap between groups; many children in Group B score above the average in Group A and many in A fall below the average of B. It is possible that a subject by treatment interaction exists. Treatment A may be preferable for some children and B for others.

Such a situation apparently exists in the field of reading. Comparisons of "linguistic" and "basal", approaches to beginning reading support the argument that there is no one best method. In a cooperative program involving 27 individual projects, Bond and Dykstra (1967) reported no consistent differences between groups with the exception that groups designated experimental (whether linguistic or basal) tended to do better than groups designated control. No one approach was completely successful for all children using it. Within each treatment group some children failed to learn to read.

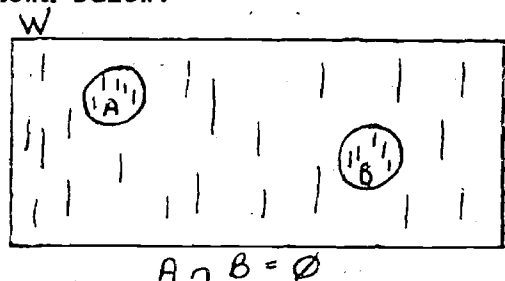
The important thing to remember is that the characteristics of the reading failures varied between treatments. The finding is consistent with a recently reported finding of Hurley that the learning disabilities, or reading failures, in Champaign, Illinois and its sister city, Urbana, had different characteristics, presumably because the school systems have different approaches to the teaching of reading.

Take the example of a class of 25 students. If all received a "linguistic" approach to reading, 20 would succeed and five would fail. If all received a "basal" approach, again 20 would succeed and five would fail, but not necessarily the same five. Perhaps the use of Venn diagrams can illustrate the point. If both approaches were equally effective and there were no treatment by subject interaction, then the children who failed under one method would also fail under the other. In this case the five failures under treatment I (Set A) would be the same as the five treatment II failures (Set B). Therefore $A = B$ and the intersection of A and B ($A \cap B$) would consist of these five subjects.

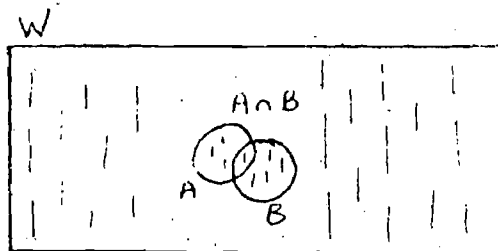
Given a set W, consisting of the 25 members of the class, of which A, B, and $A \cap B$ are subsets, the situation could be illustrated as follows:



Because A and B are mutually inclusive, the intersection of A and B equals the union of A and B, there would be five failures ($A \cap B$) no matter which method was used. On the other hand, if the characteristics of children who would fail under treatment I were completely different from those who would fail under treatment II, there would be no overlap between A and B. The intersection of A and B would be empty, $A \cap B = \emptyset$. The sets would be mutually exclusive as shown below.



Here if all members of the group received treatment I, there would be five failures, those in A. Under treatment II, there would be five failures, those in treatment B. Fifteen students would learn under either situation. If the five children in set A received treatment II and those in B received treatment I, however, there would be no failures and all 25 children would learn to read. It would be more reasonable to expect, however, that A and B would not be mutually exclusive. It would be logical to assume that there would be some children who would fail under either treatment and the intersection of A and B is not an empty set. This may be illustrated in the following way:



By judicious matching of method to subject, 23 subjects would learn to read. Neither approach would be beneficial to the remaining two and other methods would have to be investigated. The same reasoning can be applied to education of the deaf although I realize, of course, that I am grossly oversimplifying the situation. Once we accept the idea of a treatment by characteristics interaction we are in danger of being overwhelmed by the complexity of our world. A calculation of the different factors which might be relevant to early development of deaf children (e.g., etiology, age of onset of deafness, SES, etc.) suggests there are at least 4320 permutations and combinations of relevant variables. Even this is an oversimplification because factors such as hearing loss and intelligence cannot be categorized into a few discrete categories, but exist along continuous dimensions.

Because children cannot be manipulated experimentally like rats, an investigator is faced with a problem of control. Any educational system must offer what its leaders consider to be the most appropriate program to meet the needs of the children involved. Programs should not be altered merely to satisfy ex-

perimental design. An acceptable alternative, it seems to me, would be to encourage a number of diverse programs to continue to operate as they have in the past and to offer an objective evaluation by an outside agency, in this case the Special Education Department of the University of Minnesota. The investigation, then, is not designed to unearth the "best" method or philosophy per se. It is primarily concerned with individual differences and only secondarily with group effects. It is possible that one approach and one method will prove most beneficial to all children but the investigators are prepared to search for indicators of the best match for a particular child at a particular stage.

Advisory Committee

For an objective evaluation it is mandatory to have input from highly-qualified professionals reflecting various viewpoints. A balanced committee should first be represented by the disciplines of Audiology and Psychology, more specifically Psycholinguistics, and should secondly consist of individuals with differing opinions on the use of simultaneous methods with young deaf children. The Advisory Committee, which was originally convened by Dr. Ralph Hoag of the Rochester School for the Deaf, meets these criteria perfectly. The following four professionals presently are serving on the Committee and giving direction to the project:

T. Walter Carlin, Ph.D.,
Director
Sir Alexander Ewing Clinic
Ithica College
Ithica, New York

Diane Castle, Ph.D.,
Assistant Professor of Audiology
State University College
Geneseo, New York

Eric Lenneberg, Ph.D.,
Professor of Psychology
Cornell University
Ithica, New York

McCay Vernon, Ph.D.,
Professor of Psychology
Maryland State College
Westminster, Maryland

Procedures

The first year of the program is being devoted to the development and testing of assessment techniques and to visitations to programs which will be in the major study. The instruments are being developed through the cooperation of the Minneapolis and the St. Paul preschool programs for the hearing impaired. The participation and cooperation of the two programs has been especially advantageous, not only because of their accessibility -- each is about five miles from the University of Minnesota -- but also because they represent different educational philosophies and employ different methods of communication. One is oral-aural and has a family-centered socialization orientation. The other utilizes the Rochester Method with the more severely impaired and has a child-centered academic orientation. The full cooperation

of both systems is enabling the investigators to assess the appropriateness of instruments in both settings.

The official project extends from September, 1969, to June, 1974. At present nine school programs are involved and there is a possibility that three more will be added. In the fall of 1970 small teams of investigators from the University of Minnesota will visit each program and gather baseline data. Formal evaluation will be conducted each spring for four years from 1971 to 1974. The data for each year will be analyzed and will be disseminated to the programs involved annually prior to publication of progress reports.

It should be emphasized that no conditions are placed on the programs involved. They are under no obligation to continue any aspect of their programs and no restrictions are placed on their ability to alter any educational procedures at any time. Also, there are no experimental and control group distinctions in the study. Each group can be viewed as receiving an experimental treatment and the onus of being labeled a "control" or "contrast" program can be eliminated. The directors of each program will provide what in their opinion comprises an effective preschool program for hearing impaired children. The University of Minnesota, for its part, will endeavor to provide objective, reliable, valid data by which the programs can be evaluated and by which future decision making can be facilitated.

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